

REMARKS

Applicants appreciate the examination provided in the Office Action mailed October 10, 2007 ("Office Action"), the withdrawal of the prior rejections and the indication that Claims 14-18, 32-34 and 37-38 recite patentable subject matter. In response to the indication of the potential allowability of Claim 16, Applicants have amended Claim 16 to independent form. Applicants have amended independent Claims 1, 20 and 39 to further clarify patentable distinctions between the claims and the cited U.S. Patent No. 6,459,916 to Suguro ("Suguro"). Applicants further submit that several of the dependent claims are separately patentable.

Independent Claims 1, 16, 20 and 39 are patentable

Independent Claim 1 has been amended to recite:

An antenna, comprising:
a ground plane;
a conductor loop overlying the ground plane; and
a monopole extending off the ground plane *from a location overlying the ground plane*,
wherein the monopole and the conductor loop are configured to be coupled to a common feedpoint.

Independent Claim 20 has been similarly amended. Examples of such recitations are shown, for example, in FIG. 1, which illustrates a monopole 120 extending from a corner of a rectangular conductor loop 110 overlying a ground plane 140.

In rejecting Claim 1¹ as allegedly anticipated by Suguro, the Office Action asserts that Figs 1-5 of Suguro disclose all of the elements of Claim 1, identifying a ground plane underlying a dielectric sheet 3 of a flat antenna means 40 as allegedly corresponding to the recited "ground plane" of Claim 1 and identifying a helical antenna means 14 as allegedly corresponding to the recited "monopole" of Claim 1. Applicants submit that the helical antenna means 14 does not extend off the alleged "ground plane" (underlying the dielectric

¹ The Office Action omits direct reference to Claim 20 in the discussion on pages 1-4, but Applicants assume that the basis provided for the rejection of Claim 1 was intended to apply to the rejection of Claim 20. If this is not the case, Applicants request clarification of the basis for rejection of Claim 20 in any subsequent office action.

sheet 3) *from a location overlying the ground plane*. Instead, the helical antenna means 14 is spaced apart from the flat antenna means 40 and electrically coupled thereto by a communicating section 5, which is "a coaxial line, microstrip line or the like." Suguro, column 4, lines 13-23. Accordingly, Applicants submit that Suguro does not disclose or suggest the recitations of Claims 1 and 20. For at least these reasons, Applicants submit that Claims 1 and 20 are patentable over Suguro.

Claim 16 has been amended to recite:

An antenna, comprising:

- a rectangular ground plane;
- a rectangular conductor loop overlying the ground plane and having a side substantially aligned with an edge of the rectangular ground plane;
- a monopole comprising a substantially linear conductor that extends substantially perpendicular to the edge of the ground plane from a coupling point at a corner of the rectangular conductor loop at the edge of the ground plane.

Examples of embodiments of such recitations are found, for example, in FIG. 1, which illustrates an antenna with a rectangular ground plane 140 and conductor loop and monopole elements 110, 120 having the features recited in amended independent Claim 16. Applicants submit that such recitations are neither disclosed nor suggest by Suguro or the other references of record. Accordingly, Applicants submit that amended independent Claim 16 is patentable.

Claim 39 has been amended to recite:

A mobile terminal, comprising:

- a frame;
- a radio communications circuit supported by the frame;
- an antenna electrically coupled to the radio communications circuit, attached to the frame and comprising commonly fed conductor loop, monopole and helical elements, *wherein the monopole element is positioned within the helical element along an axis of the helical element*.

Examples of embodiments of such recitations may be found, for example, in FIG. 11, which shows a mobile terminal 1100 having an antenna with such features. Applicants submit that Suguro and the other references of record fail to disclose or suggest such recitations.

Applicants note that the Office Action concedes that Suguro does not disclose "the helical element arranged coaxial," but asserts:

[i]t would have been an obvious matter of design choice to employ Ito in any desired interest environment, or difference device in order to maximize the usage of his invention, since applicant does not disclose that, all of these limitations can solve any stated problem and for any particular purpose. Therefore, it appears that, the invention would not provide any improvement but merely apply the invention in different presentation.

Office Action, p. 5. Respectfully, this is an erroneous basis for interpreting references. First, the Office Action erroneously refers to "Ito" in an obviousness rejection of Claims 8, 12, 13, 19, 27, 30 and 31 that is ostensibly based on Suguro. Secondly, to support a *prima facie* showing of obviousness, the prior art reference or references, when combined, must teach or suggest all the recitations of the claims, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. §2143. As stated in the "Examination Guidelines for Determining Obviousness Under 35 U.S.C. §103 in view of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*" (M.P.E.P. §2141), a question regarding whether a claimed invention is obvious under 35 U.S.C. § 103 must include an analysis of the factors set forth in *Graham v. John Deere Co.* (383 U.S. 1, 148 USPQ 459 (1966)), which are described by the Supreme Court in the *KSR* decision to be 1) determining the scope and content of the prior art; 2) ascertaining the differences between the claimed invention and the prior art; and 3) resolving the level of ordinary skill in the pertinent art (hereinafter, the "*John Deere* factors"). The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. M.P.E.P. § 2143. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U. S. 1, 15 (2007). A Court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 13. When it is necessary for a Court to look at interrelated teachings of multiple patents, the Court must determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. *Id.* at 14. The basis provided by the Office Action

regarding alleged prior art teachings relating to arrangements of a helical element with respect to a monopole element completely fails to meet these requirements.

The dependent claims are patentable

Applicants submit that dependent Claims 1-15, 17-19, 21-38 and 40-42 are patentable at least by virtue of the patentability of the respective ones of independent Claims 1, 16, 20 and 39 from which they depend. Applicants further submit that several of the dependent claims are separately patentable.

For example, Claim 6 recites "wherein the monopole is substantially parallel to the conductor loop." The Office Action alleges that FIGs. 4 and 5 of Suguro teach these recitations. Office Action, p. 3. No such arrangement of a monopole with respect to the ground plane is shown in these figures or in the accompanying description thereof. In fact, as clearly shown in FIG. 4, the helical antenna means 14 (the alleged "monopole"), appears to be oriented *perpendicular* to the patch-like conductor 2 (the alleged "conductor loop"). Accordingly, Suguro does not provide the teachings alleged in the Office Action and, for at least these reasons, Applicants submit that Claim 6 is separately patentable. At least similar reasons support the separate patentability of Claim 25.

Claim 7 recites "wherein the monopole is coupled to the conductor loop at a corner thereof." The Office Action alleges that FIGs. 4 and 5 of Suguro teach these recitations. Office Action, p. 3. Respectfully, there is nothing in these figures or the accompanying description thereof that corresponds to such a coupling of a monopole at a corner of a rectangular conductor loop. In fact, Suguro does not specifically describe how the patch-like conductor 2 and the helical antenna means 14 are connected other than to indicate that "[t]he helical antenna means 14 is held at a position that is distant from the upper portion of the portable radio communication device 92 while interposing a signal transmission path (a coaxial line 4 or a microstrip line) between the portable radio communication device 92 and the helical antenna means 14, the signal transmission path being led from the radio communication section 31." Suguro, column 5, lines 10-18. Accordingly, Suguro does not provide the teachings alleged in the Office Action and, for at least these reasons, Applicants

submit that Claim 7 is separately patentable. At least similar reasons support the separate patentability of Claim 26.

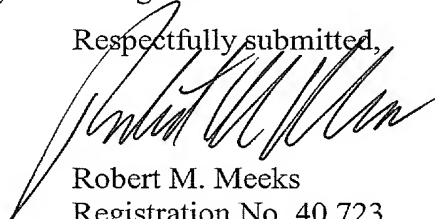
Claim 12 recites "a helical element arranged coaxial with the monopole and configured to be coupled to the common feedpoint." The Office Action alleges that such recitations are obvious over Suguro. Office Action, p. 5. As noted above with reference to Claim 39, however, the basis provided for this rejection is erroneous. Accordingly, Applicants submit that Claim 12 is separately patentable for at least reasons similar to those discussed above with reference to Claim 39. At least similar reasons support the separate patentability of Claims 19 and 30.

Applicants further note the Office Action's indication of the separate patentability of Claims 14, 15, 32-34, 37 and 38.

Conclusion

For at least the foregoing reasons, Applicants submit that all of the claims are in condition for allowance. Applicants, therefore, request allowance of the claims and passing of the application to issue in due course. Applicants encourage the examiner to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

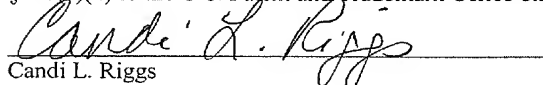


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